Montana State University REU Site Program: A Materials Research Education

John Neumeier and Yves Idzerda, Montana State University, DMR-0244058

Participants (Chosen from 40 applicants)

Tristan Butterfied, Junior at Notre Dame (CrN oxidation for fuel cell applications)

River Hutchison, Junior at Harvey Mudd College (Auger depth profiling of superlattices for fuel cell applications)

Jennifer Foster, Junior at SUNY Geneso (Fluorescence spectroscopy of Porphyrins)

Luke Galli, Junior at Colorado College (DC conductivity measurements of ferroelectrics)

Joshua Garbe, Junior at Wisconsin, Stevens Point (Manganese oxides as magnetic refrigerant materials)

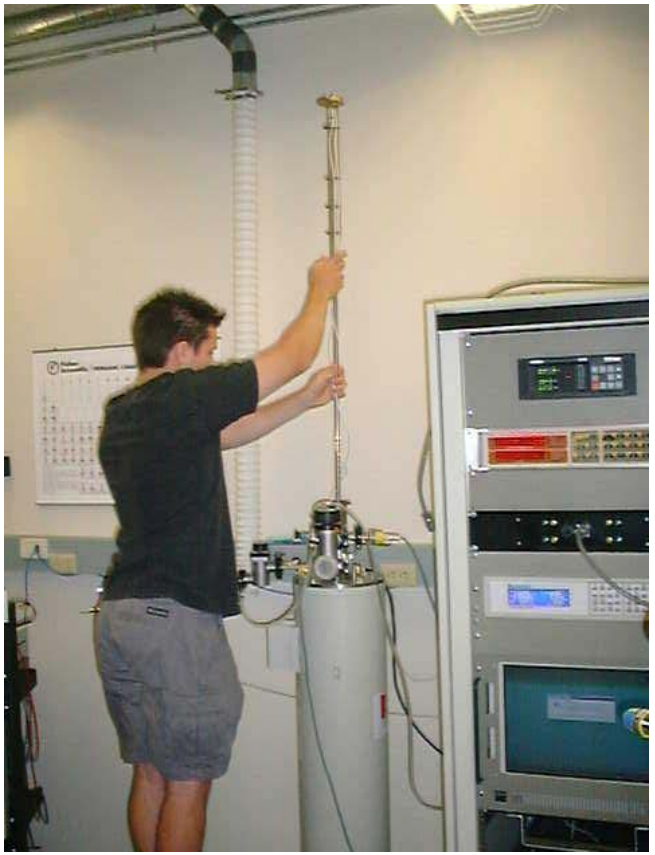
Mark Keremedjiev, Junior at Cornell (supported by NIRT grant) (Surface roughness in fuel cells)

John Macaluso, Sophomore at Stockton State College, NJ. (Thermal expansion cell for NHMFL)

Megan Miller, Sophomore at Stanford (Fluorescence detection for the Mars Rover)

Robert Peterson, Junior at MSU (EPR studies of lithium niobate)

Marshall Swearingen, Junior at Dartmouth (Dielectric spectroscopy of ferroelectric crystals)



John Macaluso inserting the quartz thermal expansion cell he constructed into the helium cryostat for testing. The cell is for the user community at the National High Magnetic Field Laboratory in Tallahassee.

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DMR0244058 **RET Supplement**

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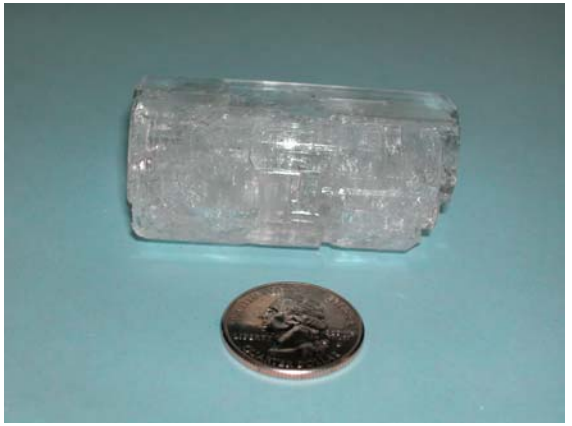
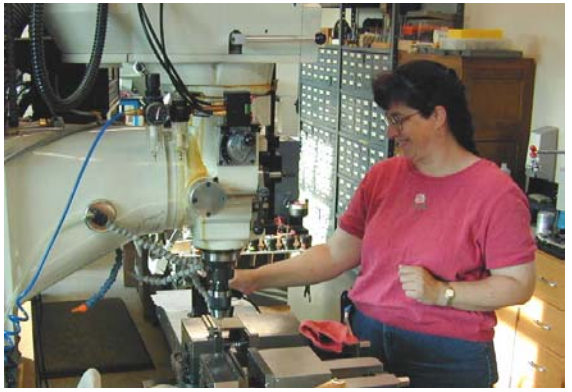
David McDonald, Sidney High School, Sidney, MT (Physics Instructor). Growth of ferroelectric single crystals from aqueous solution (Rochelle salt, TGS, KDP, and ADP). Currently setting up apparatus with students at Sidney High School to measure permittivity as a function of temperature and ferroelectric hysteresis loops. Worked with Prof. Hugo Schmidt at MSU.



Rochelle salt crystal grown by Sidney High School Student, Garvin Deitz. The quarter provides a sense of scale.

Joy-Lynn McDonald, Sidney High School, Sidney, MT (Physical Science Instructor). Worked with single-crystal x-ray diffraction as part of MSU Fuel Cell Project; included upgrades on our x-ray unit. Made Laue measurements of single crystals, developed activities for students using the data which incorporate the program *Photoshop*. Found web-based activities on wave interference for her students that will be integrated into class activities. Worked with Prof. Richard Smith at MSU.



Joy-Lynn McDonald at work in the Physics Department machine shop